USGS
science for a changing world

Western Ecological Research Center http://www.werc.usgs.gov

Can Livestock Grazing Weed out Invasive Grasses That Threaten Endemic Species?

Arid habitats of California's southern San Joaquin Valley historically included large areas of desert dominated by salt bushes *(Atriplex* spp.*)*. Agricultural, oil, and urban development have displaced most of this habitat. What remains has been further changed by the invasion of numerous species of annual grasses, most notably the genus *Bromus*, introduced from the Mediterranean area of Europe over the last 200 years. What used to be relatively bare ground between the salt bushes has become choked with a dense growth of grass and accumulated thatch**.**

Some native annual wildflowers are disappearing from the southwestern San Joaquin Valley because they cannot effectively compete with the nonnative grasses. The Kern mallow *(Eremalche parryi* ssp. *kernensis),* found only in this region and listed by the U.S. Fish and Wildlife Service as endangered, is one example. Species of wildlife endemic to the southwestern San Joaquin Valley are also declining, and some are now threatened or endangered. These include the blunt-nosed leopard lizard *(Gambelia silus),* giant kangaroo rat *(Dipodomys ingens),* and San Joaquin antelope squirrel *(Ammospermophilus nelsoni).* These animals, which rely on rapid locomotion across relatively bare ground to catch food and escape predators, are being adversely affected by the disappearance of open ground as the nonnative grasses invade the desert.

Loss of open space to nonnative grasses limits the giant kangaroo rat's ability to catch food and escape predators. Photo: Courtesy D. J. Germano, California State University, Bakersfield.

Research is still needed on:

- Replicated experiments over a wider range of habitats
- Arid environments with high environmental variability
- The effect of grazing on hydrology, soil structure, invertebrate communities, and animal burrows
- The effect of different grazing regimes (e.g. short-duration, holistic, annual, rest-rotation) on endangered species

With more than a dozen cooperators including state and federal agencies and private organizations and companies, researchers at the Western Ecological Research Center are carrying out an experiment to see if well-managed herds of cattle can be used to reduce the amount of accumulated grass, and thus benefit the declining plants and animals. The experiment includes four pastures that are about 640 acres each where cattle are grazed (treatments), and four pastures of about 60 acres each, where no grazing occurs (controls). The experiment is located on the Lokern Natural Area in western Kern County, California.

Preliminary results from the 2000 field season indicate that the numbers of kangaroo rats, antelope squirrels, and reptiles are increasing and the numbers on treatment (grazed) plots exceed those captured on control (ungrazed) plots. Of particular interest is the apparent recolonization of some treatment plots by giant kangaroo rats, one of the principal species of concern for this focused research.

For more information, contact:

USGS Western Ecological Research Center
7801 Folsom Blvd., Suite 101
Sacramento, CA 95826
Phone: 916.379.3740 Fax: 916.379.3765